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# Monthly News Letter

Bureau of Agricultural Engineering

U. S. DEPARTMENT OF AGRICULTURE



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During June Chas. E. Gapen, Chief of the Editorial and Information Division, visited field offices at Ames, Iowa, Fort Collins, Colo., St. Paul, Minn, and Madison, Wis.

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The Washington headquarters of the Bureau moved to a new location in the South Building June 18. The new offices are on the fourth and fifth floors of the third wing.

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The following papers, prepared by members of the Bureau, were read at the annual meeting of the A.S.A.E. which met at Urbana, Ill. June 21-24.

The Status of Land Drainage in the United States. By J.G. Sutton.

Use of Insulation Under High Humidity Conditions. By A.D. Edgar.

A review of Recent Progress in Natural and Artificial Forage Curing.

By W.M. Hurst.

Others attending the meeting were S.P. Lyle, C.E. Gapen, R.B. Gray, L.A. Jones, Leslie Bowen, W. V. Hukill and R.D. Marsden.

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A report entitled "Uses and Efficiencies of Water by Some Farm Crops under Irrigation in Western Nebraska" was completed by Leslie Bowen. This report relates to soil moisture studies, water use, etc., by such crops as sugar beets, potatoes, alfalfa, and oats, grown at the Scottsbluff experiment station during the past five years.

Experiments are being conducted by A.A. Young at Fullerton, Calif. to determine the relation of evaporation loss from a small screened pan to that from a 12-foot diameter open pan in order to find a pan having a rate of loss equivalent to that from a larger body of water. If the screened pan is successful as a true measure of reservoir evaporation, formulas based upon Weather Bureau records will be unnecessary. A screened pan of the type under investigation set at the reservoir site should give as close an approximation of reservoir evaporation as it is possible to obtain.

R.A. Work submitted a "Second Progress Report on Irrigation Water Supply Forecasting in Oregon."

M.R. Lewis reports that in South Dakota both the survey of the possibilities of supplementary irrigation financed by the National Resources Committee through the South Dakota State Planning Board and the Resettlement Administration program of small loans for irrigation got under way during the month. Assisted by Carl Rohwer and Dean C. Muckel, examinations of possible irrigation sites of the various counties were made. A great deal of interest was found among the farmers. On the tributaries of the Missouri flowing from the west, the area of suitable land that might be reached by low lift pumping projects is far in excess of the low water flow of the streams. Water storage is very badly needed.

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At a conference held at Brookings, S. Dak., May 17, at which there were present Mr. McMillan, State Director of the Resettlement Administration, W.W. McLaughlin, and Messrs. Lewis, Rohwer and Muckel, plans for providing farms with small supplemental irrigation supplies were considered. Attempts were made to arrange for some of these supplemental irrigation projects on the White and Grand rivers. A 15-foot test well was sunk on farm land in the White River valley near Murdo. At a depth of 20 feet, about 10 feet of water-bearing gravel was encountered. The well did not yield as much as expected but it was estimated that a properly constructed well would yield sufficient water for a 20-acre tract. Plans were prepared for such an installation, as indications were that wells in this vicinity could be recommended as economically feasible for irrigation of gardens and some stock feed. In the Grand River section the need for supplemental irrigation is urgent and it is believed that satisfactory locations can be found along the river for pumping installations. Along the Lodgepole River there is no water available for irrigation.

Heavy rains at the end of May in the drought area were of great value as more time was thus allowed for getting projects into operation this season.

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R.B. Gray attended the Third Dearborn Conference of the Farm Chemurgic Council May 25, 26 and 27, which was attended by about 1,000 agriculturists, scientists, engineers, and chemists. Many phases of "chemurgy" were brought up wherein agricultural engineers are in a position to play important roles, such as in the development of artichoke and sweet potato harvesters, hemp harvesters, etc. Many of the proposed enterprises can be economically carried out provided costs of growing and harvesting can be kept low, which is possible by the use of suitable mechanical equipment.

Enroute to the conference, Mr. Gray stopped at the Toledo office to discuss pest control plans with R.M. Merrill.

Following the conference Mr. Gray spent two days discussing the work of the corn production machinery project with Mr. Shedd and the cooperators at Ames, Iowa. He returned to Washington June 4 by way of Auburn, Ala., where he discussed with J.W. Randolph and staff present and future plans of the cotton production machinery project.

Two experimental pyrethrum harvesters constructed by W.M. Hurst and George Stafford in cooperation with the Bureau of Plant Industry, have been tested at Arlington Farm, Va., and Bell, Md. One machine, having a transverse stripping cylinder, gathered about 70 percent of the flowers and considerable stemmy material. The harvester equipped with two stripping rollers set substantially parallel and at an angle of approximately  $30^{\circ}$  with the horizontal did a very creditable job. Harvesting efficiency varied from 86 to 96 percent depending in part upon roller spacing, speed and the condition of the crop. Further tests will be made in Pennsylvania and West Virginia where a variety of crop and field conditions will be encountered.

Final copy is being made of the manuscript by W.M. Hurst and W.H. Humphries on the performance characteristics of the small combine. The study includes the harvest of small grain in Illinois, Indiana, and Ohio, and soybeans in Illinois and the Mississippi Delta.

The first draft of the compilation on Tractor History being assembled by W.R. Humphries is nearing completion. Any material in this connection such as photographs, cuts, descriptive matter that may be of interest would be appreciated.

G.A. Cumings spent a short time at Geneva, N.Y. inspecting the fertilizer placement work with tomatoes and beans and at Lancaster, Pa., with tobacco.

Three new experiments for studying fertilizer placement with sweet potatoes were begun recently by W.H. Redit at Onley, Va., Salisbury, Md., and Bethel, Delaware. Mr. Redit says that considerable interest in a more efficient use of fertilizer is being shown by the growers in these districts where practically all of a large tonnage of fertilizer is either broadcast before transplanting or side-dressed 10 days to two weeks after setting out the sprouts. He and W.R. Humphries set out tobacco at Oxford, N.C. the first week in June, but were unable to set out the tomatoes at Geneva, N.Y. because of unfavorable soil conditions.

L.G. Schoenleber returned to Washington recently from a trip to Ohio and Michigan in connection with the fertilizer placement studies in those states. While in Michigan he planted two potato experiments and three with white beans. A new experiment with soybeans was inaugurated at Wooster, Ohio as well. A.H. Glaves and C.E. Gopen of the Bureau, observed the planting operations of the bean experiment at Akron, Mich.

D.B. Eldredge assisted Mr. Schoenleber with the sugar beet plantings in Michigan and Ohio and also in making repairs to the experimental beet and bean drill at the Toledo office. Later he assisted Mr. Cumings at Geneva, N.Y.. He is now engaged in making alterations on a two-row celery planter to be used in New York State for placement work in July.

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A conference on the research work in progress in the Central District Camps was held by Lewis A. Jones in Chicago June 10 and 11. The conference was attended by J.G. Sutton and Research Engineers Cotton, DeWeese, Fritz, Kuhnel and Torreyson.

Mr. Jones was at the University of Iowa, at Iowa City on June 11 to confer with R.D. Marsden and the cooperative personnel of the Engineering Experiment Station on the continuation of drainage engineering research studies being conducted at the Hydraulic Laboratory.

The Central District Drainage Camps list the following total work accomplished in May: 1,453,557 cubic yards excavation and embankment, requiring 21,711 man-days; 3,331,540 square yards clearing, requiring 24,189 man-days; 48,227 lineal feet of tile reconditioning, requiring 6104 man-days, and other work such as structures, surveys and emergency flood work totalling 15,759 man-days. Cooperation from local enterprises amounting to \$90,265 was furnished during the month.

In the tests on supplemental irrigation of strawberries, F.E. Staebner reports that interesting results have apparently been secured from both the Salisbury, Md. plots and those at Willard, N.C. The data are not yet worked up but the indications are that at Salisbury, Md., not only was a larger yield of fruit obtained per acre than in 1936 but also a larger number of berries due probably to the irrigations during last year's dry weather. This is stated by one of our cooperating horticulturists to be a very unusual occurrence for strawberries the second year on the same piece of ground.

At Willard, N.C. it seems that some of the irrigation treatments increased the yields in spite of ample rainfall and very wet soil in the early part of the season, and also that certain irrigation treatments and time of irrigating, as well as the kind of equipment used, had a bearing on the percentage of the total marketable fruit produced.

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Wallace Ashby is in the field making arrangements for a continuation of the wheat storage investigations. His trip will include the North Dakota Experiment Sta., the Ft. Hays Experiment Sta. in western Kansas, and the Illinois Station at Urbana.

A survey of farm building conditions in Illinois is being made by J.R. Dodge. A survey to obtain data on farm water supply and sewage disposal in Pennsylvania, Ohio, Illinois and Indiana, has been completed by J.W. Rockey.

J.R. McCalmont is at New Brunswick, N.J. making a test of pressures of molasses silage in silos, in cooperation with the New Jersey Agricultural Experiment Station.

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#### Publications issued:

"Use of Soil Moisture and Fruit Growth Records for Checking Irrigation Practice in Citrus Orchards". Circular 426. "Use of Concrete on the Farm". F.B. 1772. "An Improved Type of Farm Potato Storage". Extension Service, University of Maine Bul. No. 238. "An Improved Trackside Storage for Potatoes". Extension Service, University of Maine Bul. 237.